1   1.   For use in transforming colors between color

2   imaging systems, a color mapping method comprising:

3   using forward transformation profiles that

4   characterize the color imaging systems to generate

5   respective sets of device-independent color values for the

6   color imaging systems;

7   calculating color conversions by recursively

8   reducing differences between the sets of device-independent

9   color values; and

10   constructing a color map describing a relationship

11   between the color imaging systems using the color

12   conversions.

1   2.   A color mapping method, according to claim 1,

2   further comprising recursively reducing differences between

3   black channel information.

1   3.   A color mapping method, according to claim 1,

2   further comprising using an error function for calculating

3   the color conversions.

1   4.   A color mapping method, according to claim 1,

2   further comprising configuring at least one of the profiles

3   to account for certain perceptual effects on color

4   appearance.

1   5.   A color mapping method, according to claim 1,

2   wherein the color map comprises at least one of the

3   following: a lookup table, and an equation.

1   6.   A color mapping method, according to claim 1,

2   further comprising:

3   storing the color map;

4   detecting respective types of color imaging

5   devices between which a color transformation is to be

6   performed; and

7   in response to the detected types, selecting a

8   stored color map.

1   7.   For use in transforming colors between source

2   and destination color imaging systems, a color mapping

3   method comprising:

4   using profiles that characterize the color imaging

5   systems to generate device-independent color values for the

6   source color imaging system, the device-independent color

7   values having a same dimensionality as the source color

8   imaging system;

9   using the profiles to perform a color conversion

10   for converting the device-independent color values to

11   device-dependent values of the destination color imaging

12   system; and

13   using the color conversion to define a color map

14   for transforming colors between the color imaging systems.

1   8.   A color mapping method, according to claim 7,

2   wherein the color conversion is performed at least twice.

1   9.   A color mapping method, according to claim 7,

2   further comprising:

3   using the color conversion to evaluate its

4   accuracy at least once; and

5   revising the color conversion at least once to

6   improve its accuracy.

1   10. For use in transforming colors between source

2   and destination color imaging systems, a color mapping

3   method comprising:

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1	(a) using profiles characterizing the color

2	imaging systems to generate device-independent color values

3	for the source color imaging system, the device-independent

4	color values having a same dimensionality as the source

5	color imaging system;

6	(b) using the profiles to perform a color

7	conversion for converting the device-independent color

8	values to device-dependent values of the destination color

9	imaging system;

10	(c) using the color conversion to improve the

11	accuracy of the color conversion relative to a quality

12	threshold;

13	(d) returning to step (c) until the color

14	conversion satisfies the quality threshold; and

15	(e) using the color conversion to define a color

16	map for transforming colors between the color imaging

17	systems.

1	11. For use in transforming colors between color

2	imaging systems, a color mapping arrangement comprising:

3	means for using forward transformation profiles

4	that characterize the color imaging systems to generate

5   respective sets of device-independent color values for the

6   color imaging systems;

7   means for calculating color conversions by

8   recursively reducing differences between the sets of device-

9   independent color values; and

10   means for constructing a color map describing a

11 relationship between the color imaging systems using the

12 color conversions.

1   12. For use in transforming colors between first

2   and second color imaging systems respectively using first

3   and second color coordinate systems, a color mapping method

4   comprising:

5   (a) generating first device-independent color

6   coordinates as a function of color coordinates in the first

7   color coordinate system;

8   (b) estimating preliminary color coordinates in

9   the second color coordinate system;

10   (c) generating second device-independent color

11 coordinates as a function of the preliminary color

12 coordinates;

13   (d)   adjusting the preliminary color coordinates

14   to reduce an error between the first and second device-

15   independent color coordinates;

16   (e)   returning to step (a) until the error

17   satisfies a quality threshold; and

18   (f)   constructing a color map describing a

19   relationship between the first and second color imaging

20   systems as a function of the adjusted color coordinates.

1   13.   A color mapping method, according to claim

2   12, further comprising using the color coordinates in the

3   first color coordinate system to estimate the preliminary

4   color coordinates.

1   14.   For use in transforming colors between color

2   imaging systems, a color mapping arrangement comprising:

3   a computer arrangement, programmed to

4   use forward transformation profiles that

5   characterize the color imaging systems to generate

6   respective sets of device-independent color values for the

7   color imaging systems,

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8   calculate color conversions by recursively

9   reducing differences between the sets of device-independent

10   color values, and

11   construct a color map describing a

12   relationship between the color imaging systems using the

13   color conversions; and

14   a memory, configured and arranged to store the

15   color map.

1   15. A color mapping arrangement, according to

2   claim 14, wherein the computer arrangement is further

3   programmed to use an error function for calculating the

4   color conversions.

1   16. A color mapping arrangement, according to

2   claim 14, wherein the computer arrangement is further

3   programmed to configure at least one of the profiles to

4   account for certain perceptual effects on color appearance.

1   17. A color mapping arrangement, according to

2   claim 14, wherein the computer arrangement is further

3   programmed to construct at least one of the following: a

4   lookup table, and an equation.

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1   18. A color mapping arrangement, according to

2 claim 14, wherein the computer arrangement is further

3 programmed to

4   detect respective types of color imaging devices

5 between which a color transformation is to be performed, and

6   in response to the detected types, select a stored

7 color map.

1   19. For use in transforming colors between color

2 imaging systems, a data storage medium storing a computer-

3 executable program that, when executed,

4   uses forward transformation profiles that

5 characterize the color imaging systems to generate

6 respective sets of device-independent color values for the

7 color imaging systems;

8   calculates color conversions by recursively

9 reducing differences between the sets of device-independent

10 color values, and

11   constructs a color map describing a relationship

12 between the color imaging systems using the color

13 conversions.

1   20. A data storage medium, according to claim 19,

2   wherein the computer-executable program recursively reduces

3   differences between black channel information.

1   21. A data storage medium, according to claim 19,

2   wherein the computer-executable program uses an error

3   function for calculating the color conversions.

1   22. A data storage medium, according to claim 19,

2   wherein the computer-executable program configures at least

3   one of the profiles to account for certain perceptual

4   effects on color appearance.

1   23. A data storage medium, according to claim 19,

2   wherein the computer-executable program generates at least

3   one of the following: a lookup table, and an equation.

1   24. A data storage medium, according to claim 19,

2   wherein the computer-executable program:

3   stores the color map;

4   detects respective types of color imaging devices

5   between which a color transformation is to be performed; and

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6   in response to the detected types, selects a

7   stored color map.